



# Australian Bureau of Statistics

## **1301.6 - Tasmanian Year Book, 1996**

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### **Feature Article - South of Tasmania**

South of Tasmania lies a vast expanse of water, the Southern Ocean, with the continent of Antarctica over 2,000 kilometres away. Only Macquarie Island, nearly 1300 kilometres to the southeast of Tasmania interrupts the waves. The advent of tourist ship visits to Macquarie Island has made the climate of these waters of interest to the traveller.

#### **A WORLD OF COLD WINDS**

The southernmost islands of Tasmania are notoriously windy places, suggesting the power of the westerly winds that blow across the great Southern Ocean. In the zone just north of Antarctica, a belt of low pressure encircles the globe, while in the subtropics the pressure is higher. The result is a band of strong winds, sometimes called the 'Roaring 40's' and the 'Furious Fifties', extending from just south of Australia to just north of Antarctica. In this band, the wind direction varies as low pressure troughs extend into it from the south or high pressure ridges extend into it from the north, but mostly the wind blows from between north-west and south-west.

The winds over the Southern Ocean are often far stronger than the trade winds of near-equatorial regions but are more variable in direction and speed. They might be called the 'trade winds' of the south, being used in the time of sailing ships to travel from South Africa to Australia. Typical wind speeds are 20 to 30 knots, with speeds of 70 knots common in the intense cyclones that form in these latitudes. Even the powerful commercial ships of today can save fuel and time by making use of these winds and the sea surface currents they generate.

Temperatures are usually low, influenced by sea surface temperatures that range from about 13 degrees C in the north near Tasmania to about 4 degrees C in the south near Macquarie Island. Strong southerly winds may be 5 degrees colder than the water, while northerlies may be warmer by a similar amount. Further south, sea surface temperatures fall to as low as -1.8 degrees C, cold enough to allow ice to form at the surface. During winter, ice covers the ocean as far north as about 60 degrees South, with icebergs commonly found as far north as 58 degrees South. Icebergs are rare in the waters off Macquarie Island and virtually unheard of as far north as Tasmania.

The combination of strong winds, low air temperatures and low water temperatures makes this part of the world hazardous to the unwary traveller. Even the waters surrounding Tasmania are cold enough to kill a person immersed in them for a few hours. Immersion in the sea off Antarctica can kill within minutes.

The traveller in the Southern Ocean may be able to ignore the cold winds from the comfort of a warm cabin, but the one thing that cannot be ignored in smaller ships is the swell - the longer ocean waves.

#### **A VAST CATCHMENT FOR WAVES**

As the winds blow over the Southern Oceans, waves develop and move across the water. As the

waves move out of the area of the strongest winds (or the winds ease), the shorter waves disappear, leaving only the longest of waves, called the 'swell'. Swell waves may travel for thousands of kilometres before dissipating or losing much of their energy when they reach land. Because there is so little land in the southern hemisphere, many swell waves never reach land but dissipate days later, at sea.

For the sea traveller, this means almost never-ending waves, even when the winds are light. For most travellers, a few days aboard allows them to become accustomed to the constant rolling or pitching movement of their ship through the waves. Near Tasmania, the waves are usually 2 to 3 metres from trough to crest, reaching 4 to 5 metres near Macquarie Island. A small boat may become invisible much of the time, and anybody unfortunate enough to fall overboard becomes very difficult to see, even if they wear brilliantly coloured clothing. When large low pressure systems cause strong southwesterly winds to blow over extensive ocean areas, the swell can reach 8 metres or more, especially near Macquarie Island.

The sea birds, of course, are at home above the waves, taking advantage of the rising air over the crests to gain lift and reduce the energy needed to stay aloft. Above the ship, an albatross is often seen taking advantage of air rising over the ship to glide effortlessly for hours.

## **A WORLD OF CLOUD, RAIN AND SNOW**

Captain Cook spent about three years sailing the Southern Ocean, searching for the great southern continent that was thought to exist. During this time, he was able to find his position with three simple tools: an accurate clock, a sextant and a set of mathematical tables.

Unfortunately, the use of a sextant requires that the sun and the horizon of the sea be visible.

This is not often achieved in the Southern Ocean, because of the persistent cloudiness. A traveller can spend a week at sea without seeing the sun.

Cloud amount varies, but it is rare for clear skies to be experienced. Northwesterly winds often bring low cloud and drizzle, with rain at times as troughs approach. Towards Antarctica, of course, snow is more likely than rain. Southwesterly winds are usually noted for lower temperatures and showers, often falling as snow.

## **MACQUARIE, OUR SOUTHERNMOST ISLAND**

Macquarie island is unprotected from the force of the westerlies or from the westerly swells, but the height of the island and its north/south orientation allows it to form a barrier to both wind and waves. As a result, the climate of the protected eastern side is a little more favourable than the western side and the strong westerly winds are often blocked by the higher plateau that runs from the southern tip to the small spit that joins it to a small northern cape. The relative shelter of the eastern side makes it home to many thousands of subantarctic penguins, and also to the elephant seals that breed on its beaches.

Like the oceans that surround it, Macquarie island is a cloudy, windy place. The traveller can only expect two or three days of sunshine, clear skies and light winds per year. For most of the year, skies are cloudy with rain showers (or snow showers for much of the year) and strong winds bring ocean waves crashing onto the western side of the island. Snow covers most of the island during winter and spring, while the rain and drizzle persist for the summer and autumn.

## **SUMMARY**

The region south of Tasmania is part of the great Southern Ocean. Climate is cloudy and cold. Showers of rain or snow occur frequently.

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